

December 5, 1996

Mr. D. Wayne Hedberg
Division of Oil, Gas, & Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

RE: Escalante tailings impoundment under drain plug

Dear Mr. Hedberg:

Hecla Mining Company reclaimed the Escalante tailings impoundment in 1994 in accordance with our approved reclamation plan for the facility. The underdrain, however, was allowed to remain open as requested in your February 17, 1994 letter. We have monitored the underdrain flow (table and graph attached) for two years following placement of the pond cap as required in the reclamation plan. Underdrain flow has continued to decline and has now dropped below 0.25 gallons per minute. We would like to plug the underdrain and eliminate the need to maintain the equipment necessary to contain and evaporate the water. The drain must ultimately be plugged to facilitate the final plant site reclamation or sale of the property for other uses.

Based on previous analyses of the tailings hydrology, the tailings have long since been drained of any free solutions. Fox Consultants, Inc. analyzed the Escalante tailings properties in 1983 and 1984. The results of their work showed that the tailings, even during operations, were largely unsaturated. Underdrain flow while the mill was in full operation in 1983 was approximately 18 gpm. Fox estimated the phreatic surface within the tailings at that time to be less than 10 feet.

A 1984 test boring into the tailings showed the moisture content to average approximately 30 percent. The field capacity for the tailings, based on the physical characteristics of the material, was estimated to be 38 percent. These results verified the tailings were not completely saturated, even while the mill operated.

In their 1983 report, Fox estimated the residence time for tailings pore fluid to be 0.8 years to 3.0 years for a 50 foot deep tailings deposit. The pond has been draining for over 5 years, two years longer than the estimated maximum time necessary to remove all available pore fluid. Also in the 1983 report, Fox estimated flow due to tailings consolidation alone would be approximately 2.5 gpm. Current flow is less than 10% of that figure.



The attached graph shows a precipitous drop in flow rate from the start of monitoring through early 1991. This would correspond with Fox's estimated time for draining any free solutions. The rate of change in flow from early 1991 until mid-1994 is likely due to consolidation of the tailings after closure. The current flow rate of less than 0.25 gpm is likely caused primarily by continued minor consolidation of the tailings.

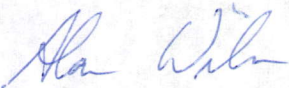
The tailings are clearly unsaturated at this point and continued draining will have no impact on the head against the liner since there is none. In 1991 Grant Schreiber, Inc. calculated the time required to fill the pond due to infiltration through the proposed cap to be 7,600 years. This was based on an infiltration rate of 0.003 inches per year and an initial moisture content of 30%. Since the tailings have been draining for several years the moisture content will be considerably less than the 30% observed during operation. In addition, Grant Schreiber calculated in 1993 that the infiltration rate through the cap using the materials as constructed would be only 0.0006 inches per year. This calculation assumed a subsoil layer of 18 inches while up to five feet was placed over part of the pond to provide for surface drainage.

The reduced infiltration rate alone extended the time necessary to fill the pond to 38,000 years. The reduced initial moisture content will extend that time even further. A reduction in the initial moisture content of 1% by volume adds approximately 4,400 years to the time required to fill. The infiltration rate calculations were based on conservative assumptions and the likelihood of the pond ever filling is small. The effect of removing additional water at the current rate will have a trivial effect on the life of the system.

A detailed description of the plug design will be provided for your review prior to installation. I anticipate injecting bentonite with a grouted plug to seal the pipe.

Please give me a call at (208) 769-4157 if you need any additional information.

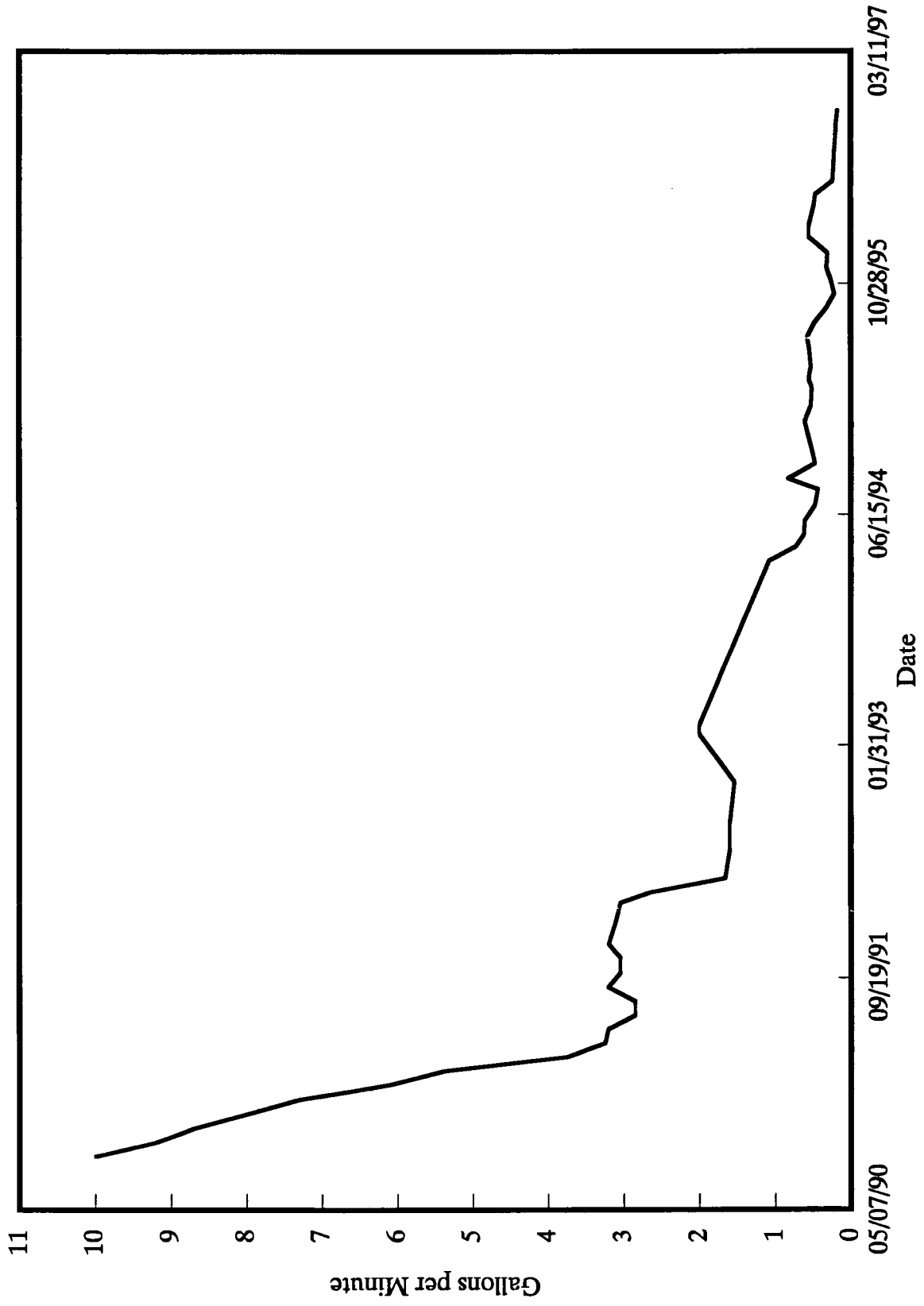
Sincerely yours,



Alan Wilson
Senior Reclamation Engineer

cc: L. A. Drew

Escalante Underdrain Flow

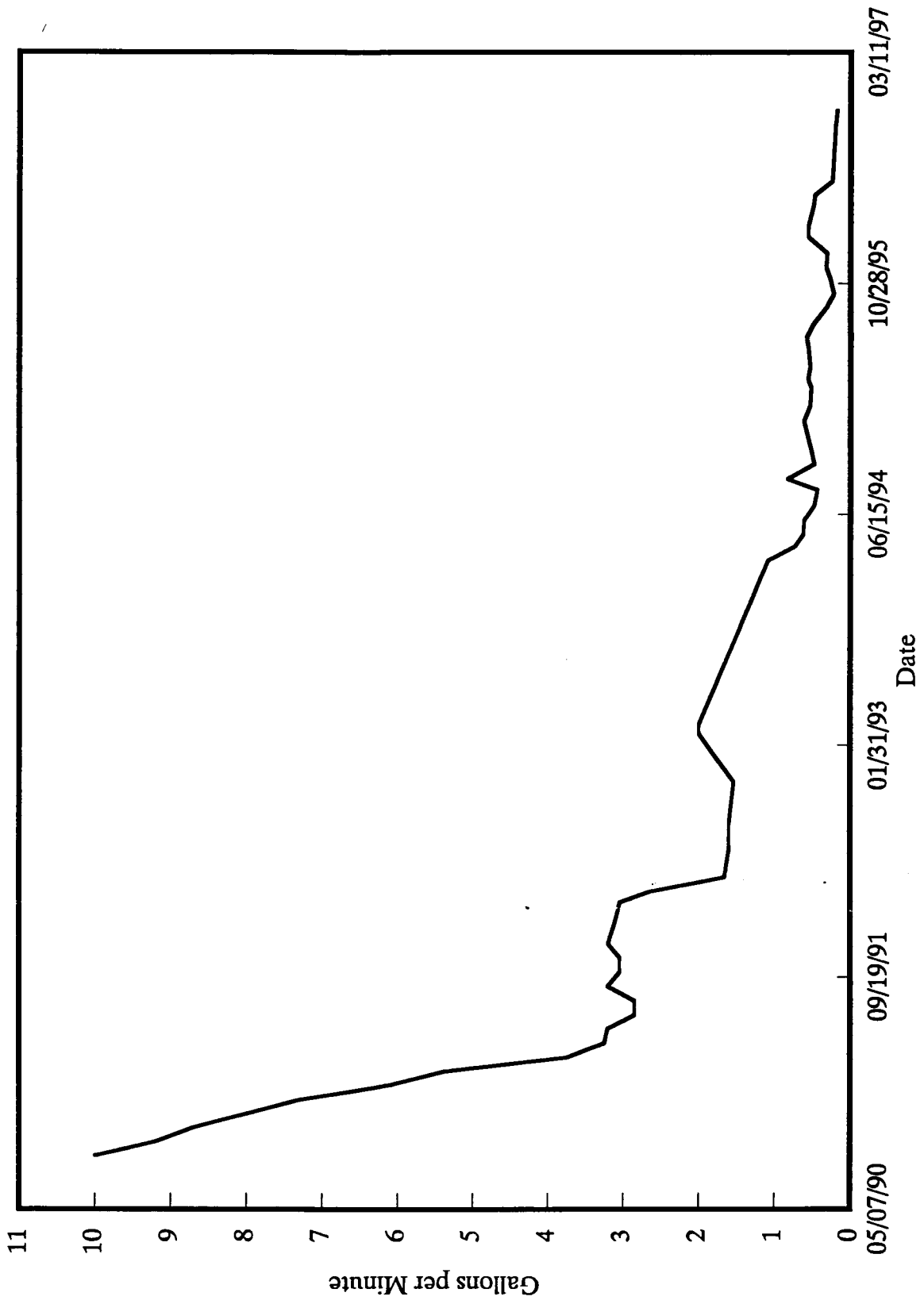


Escalante Underdrain Flow

Date	Flow (gpm)		Date	Flow (gpm)	Date	Flow (gpm)
9/26/90	10.00		1/24/93	1.86	1/2/96	0.31
10/24/90	9.20		2/25/93	2.00	2/6/96	0.56
11/20/90	8.70		3/19/93	2.00	3/4/96	0.56
12/21/90	8.00		3/7/94	1.09	4/18/96	0.49
1/21/91	7.30		4/8/94	0.73	5/7/96	0.48
2/21/91	6.10		5/4/94	0.63	6/5/96	0.24
3/26/91	5.40		6/2/94	0.61	7/8/96	0.23 *
4/30/91	3.75		7/5/94	0.48	8/5/96	0.22 *
5/30/91	3.25		8/8/94	0.44	9/3/96	0.21 *
6/30/91	3.21		9/1/94	0.83	10/2/96	0.20 *
7/29/91	2.85		10/3/94	0.48	11/4/96	0.19
8/28/91	2.85		11/3/94	0.52		
9/23/91	3.21		1/3/95	0.61		
10/30/91	3.05		2/6/95	0.53		
11/18/91	3.05		3/17/95	0.52		
12/18/91	3.20		4/4/95	0.56		
1/22/92	3.10		5/2/95	0.54		
2/28/92	3.05		6/7/95	0.56		
3/22/92	2.65		7/5/95	0.58		
4/22/92	1.66		8/3/95	0.49		
6/23/92	1.60		9/6/95	0.32		
7/23/92	1.60		10/5/95	0.22		
8/20/92	1.60		11/3/95	0.26		
11/15/92	1.54		12/1/95	0.33		

* Flow was not measured these months but appeared to be constant visually.

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4/30/91	3.75		7/5/94	0.48	8/5/96	0.22 *
5/30/91	3.25		8/8/94	0.44	9/3/96	0.21 *
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